

ELEMENT WASHINGTON DC LLC

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MEASUREMENT REPORT FCC PART 15.407

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 09/02/2022 – 02/24/2023 Test Report Issue Date: 02/24/2023 Test Site/Location: Element lab., Columbia, MD, USA Test Report Serial No.: 1M2212080136-11-R1.A3L

FCC ID:

A3LSMS911JPN

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model(s): EUT Type: Frequency Range: Modulation Type: FCC Equipment Class: FCC Rule Part(s): Test Procedure(s):

Certification SC-51D, SCG19 Portable Handset 5180 – 5885MHz OFDMA Unlicensed National Information Infrastructure TX (NII) Part 15 Subpart E (15.407) ANSI C63.10-2013, KDB 789033 D02 v02r01, KDB 291074 D02 v01, KDB 648474 D03 v01r04, KDB 662911 D01 v02r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013 and KDB 789033 D02 v02r01. Test results reported herein relate only to the item(s) tested.

Note: This revised Test Report (S/N: 1M2212080136-11-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez Executive Vice President



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			MI	ON
UNII Band	UNII Band Bandwidth (MHz)		Max. Power (mW)	Max. Power (dBm)
1		5180 - 5240	57.943	17.63
2A		5260 - 5320	114.288	20.58
2C	20	5500 - 5720	122.462	20.88
3		5745 - 5825	117.220	20.69
4		5845 - 5885	99.312	19.97
1		5190 - 5230	125.026	20.97
2A		5270 - 5310	114.815	20.60
2C	40	5510 - 5710	123.880	20.93
3		5755 - 5795	119.399	20.77
4		5835 - 5875	98.628	19.94
1		5210	54.576	17.37
2A		5290	55.847	17.47
2C	80	5530 - 5690	120.226	20.80
3		5775	68.391	18.35
4		5855	100.000	20.00
1/2A		5250	54.576	17.37
2C	160	5570	70.146	18.46
4		5815	107.399	20.31
		EUT Overview	1	

Note: The UNII Band 4 max power values shown in the above table are e.i.r.p values.

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

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PRODUCT INFORMATION 2.0

2.1 **Equipment Description**

The Equipment Under Test (EUT) is the Samsung Portable Handset FCC ID: A3LSMS911JPN. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

Test Device Serial No.: 0262M, 0280M, 0219M, 0210M, 0232M

2.2 **Device Capabilities**

This device contains the following capabilities:

Ch.

54

62

850/1900 GSM/GPRS/EDGE, 850 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

	Band 1		Band 2A		Band 2C			Band 3		Band 3/4
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)] [Ch.	Frequency (MHz)	Ch	Frequency (MHz)
36	5180	52	5260	100	5500		149	5745	169	5845
:	:	:	:	:	:		:	:	:	:
40	5200	56	5280	120	5600		157	5785	173	5865
:	:	:	:	:	:		:	:	:	:
48	5240	64	5320	144	5720		165	5825	177	5885

Table 2-1. 802.11ax (20MHz) Frequency / Channel Operations

5710

	Band 1
Ch.	Frequency (MHz)
38	5190
:	:
46	5230

Band 2A	
Frequency (MHz)	Ch.
5270	102
:	:
5310	118
	:

Band 2C		Band 3
Frequency (MHz)	Ch.	Frequency (MHz)
5510	151	5755
:	:	:
5590	159	5795

	Band 3/4
Ch.	Frequency (MHz)
167	5835

5875

(

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175

Table 2-2. 802.11ax (40MHz BW) Frequency / Channel Operations

142

	Band 1		Band 2A		Band 2C		Band 3			Band 3/4
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)]	Ch.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775		167	5835
				:	:			-		
				122	5610					
				:	:					
				138	5690					
	Table 2-3. 802.11ax (80MHz BW) Frequency / Channel Operations									

	Band 1/2A			Band 2C			Band 3/4		
Ch.	Frequency (MHz)		Ch.	Frequency (MHz)		Ch.	Frequency (MHz)		
50	5250		114	5570		163	5815		
Table 2-4 802 11a			(160MH	z BW) Frequency / (ha	nnol O	nerations		

Table 2-4. 802.11ax (160MHz BW) Frequency / Channel Operations

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Notes:

5GHz NII operation is possible in 20MHz, and 40MHz, 80MHz, and 160MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013 and KDB 789033 D02 v02r01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Mode	Antenna	Bandwidth [MHz]	Tone	Duty Cycle
			26T	99.3
802.11ax	MIMO CDD	20	52T	99.3
NII RU		20	106T	98.8
			242T	98.6
			26T	99.2
802.11ax			52T	99.3
NII RU	MIMO CDD	40	106T	98.8
			242T	98.6
			484T	98.6
			26T	99.3
	MIMO CDD	80	52T	99.3
802.11ax			106T	98.8
NII RU			242T	98.6
			484T	98.6
			996T	98.5
		160	26T	99.3
			52T	99.2
802.11ax	MIMO CDD		106T	98.8
NII RU		1st	242T	98.6
			484T	98.5
			996T	98.5
			26T	99.3
			52T	99.3
802.11ax	MIMO CDD	160	106T	98.8
NII RU		2nd	242T	98.6
			484T	98.6
			996T	98.5
802.11ax NII RU NII RU	MIMO CDD	160 Full	996*2T	99.7

Table 2-5. Measured Duty Cycles

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2. The device employs MIMO technology. Below are the possible configurations.

	WiEi Configurationa		SISO		SDM		CDD	
WiFi Configurations		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2	
	11ax (20MHz)	×	×	✓	√	✓	✓	
5GHz	11ax (40MHz)	×	×	✓	√	✓	✓	
SGHZ	11ax (80MHz)	×	×	✓	√	✓	✓	
	11ax (160MHz)	×	×	\checkmark	\checkmark	\checkmark	\checkmark	

Table 2-6	. Frequency	/ Channel	Operations
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✓ = Support ; × = NOT Support
 SISO = Single Input Single Output
 SDM = Spatial Diversity Multiplexing – MIMO function

3. This device supports simultaneous transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz (WLAN & BT) and 5GHz bands simultaneously on each antenna. The following tables show the worst case configurations determined during testing. The data for these configurations is contained in this test report. The BT + 5GHz case is not considered as worst case since the BT power is lower than the 2.4GHz WLAN power.

Configuration 1: ANT1 and ANT2 both transmitting in 2.4GHz and 5GHz modes simultaneously

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1, 2	1, 2
Channel	11	120
Operating Frequency (MHz)	2462	5600
Data Rate (Mbps)	1Mbps	6Mbps
Mode	802.11b	802.11a

Configuration 2: ANT1 and ANT2 both transmitting in 2.4GHz and 6GHz modes simultaneously

Description	2.4 GHz Emission	6 GHz Emission
Antenna	1, 2	1, 2
Channel	6	25
Operating Frequency (MHz)	2437	6075
Data Rate (Mbps)	1Mbps	6Mbps
Mode	802.11b	802.11a

Table 2-8. Config-2 (MIMO 2.4GHz & MIMO 6GHz)

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2.3 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna 1 Gain [dBi]	Antenna 2 Gain [dBi]	Directional Ant. Gain [dBi]
5.20	-5.07	-3.05	-0.99
5.30	-3.14	-2.12	0.40
5.50	-2.69	-5.11	-0.81
5.80	-2.32	-5.07	-0.58
5.85	-3.14	-4.77	-0.91

Table 2-9. Antenna Peak Gain

2.4 Test Configuration

The EUT was tested per the guidance of KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.5 Software and Firmware

The test was conducted with software/firmware version S911USQU0AVJM installed on the EUT.

2.6 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 v02r01 and KDB 291074 Do2 v01 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the EUT are permanently attached.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.13
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	ETS-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-001
-	ETS-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-002
-	AP2-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-001
-	AP2-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-002
-	WL25-1	Conducted Cable Set (25GHz)	7/29/2022	Annual	7/29/2023	WL25-1
-	WL25-2	Conducted Cable Set (25GHz)	7/29/2022	Annual	7/29/2023	WL25-2
-	WL25-3	Conducted Cable Set (25GHz)	7/29/2022	Annual	7/29/2023	WL25-3
-	WL25-4	Conducted Cable Set (25GHz)	7/29/2022	Annual	7/29/2023	WL25-4
-	WL40-1	Conducted Cable Set (40GHz)	7/29/2022	Annual	7/29/2023	WL40-1
Agilent	N9038A	MXE EMI Receiver	1/21/2022	Annual	1/21/2023	MY51210133
Agilent	N9020A	MXA Signal Analyzer	3/4/2022	Annual	3/4/2023	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	8/18/2022	Annual	8/18/2023	MY49430494
Anritsu	ML2495A	Power Meter	5/9/2022	Annual	5/9/2023	1328004
Anritsu	ML2495A	Power Meter	3/17/2022	Annual	3/17/2023	941001
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	4/13/2022	Biennial	4/13/2024	121034
Emco	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	7/20/2021	Biennial	7/20/2023	9203-2178
ETS-Lindgren	3816/2NM	Line Impedance Stabilization Network	8/11/2022	Biennial	8/11/2024	114451
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	9/6/2022	Annual	9/6/2023	MY54490576
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2022	Annual	3/15/2023	MY54500644
Pasternack	NMLC-2	Line Conducted Emissions Cable (NM)	12/19/2021	Annual	12/19/2022	NMLC-2
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/29/2022	Annual	8/29/2023	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/25/2022	Annual	8/25/2023	100348
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/14/2022	Biennial	2/14/2024	A050307
Sunol	DRH-118	Horn Antenna (1-18 GHz)	1/14/2022	Biennial	1/14/2024	A042511
Sunol	JB6	Bi-Log Antenna (30M - 6GHz)	11/13/2020	Biennial	11/13/2022	A051107

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
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FCC Classification:	Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
N/A	26dB Bandwidth	N/A		PASS	Section 7.2
15.407(e)	6dB Bandwidth	>500kHz(5725-5850MHz)		PASS	Section 7.3
15.407 (a.1.iv), (a.2), (a.3)	Maximum Conducted Output Power	Maximum conducted powers must meet the limits detailed in 15.407 (a)	CONDUCTED	PASS	Section 7.4
15.407 (a.1.iv), (a.2), (a.3)	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a)		PASS	Section 7.5
15.407(h)	Dynamic Frequency Selection	See DFS Test Report		PASS	See DFS Test Report
15.407(b.1), (2), (3), (4)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b)		PASS	Section 7.6
15.205, 15.407(b.1), (4), (5), (6)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	RADIATED	PASS	Section 7.6, 7.7

Table 7-1. Summary of Test Results

Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element "UNII Automation," Version 4.7.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element "Chamber Automation," Version 1.5.0.
- 802.11ax OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
- Only one RU index could be selected at a time, so no contiguous or non-contiguous RUs were considered for testing.

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7.2 26dB Bandwidth Measurement – 802.11ax OFDMA RSS-Gen [6.2]

Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

The 26dB bandwidth is used to determine the conducted power limits.

Test Procedure Used

ANSI C63.10-2013 – Section 12.4 KDB 789033 D02 v02r01 – Section C

Test Settings

- The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = approximately 1% of the emission bandwidth
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

The 26dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

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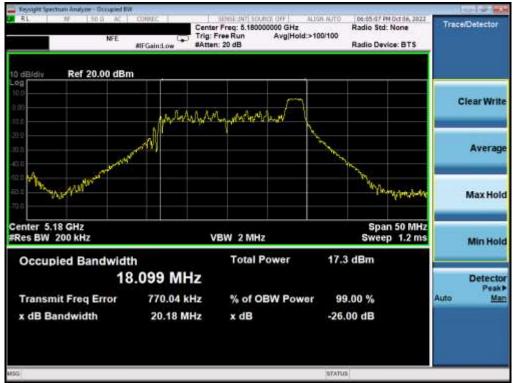
MIMO Antenna-1 26 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	26T	MCS0	20.18
	5200	40	ax (20MHz)	26T	MCS0	20.44
l 1	5240	48	ax (20MHz)	26T	MCS0	18.79
Band 1	5190	38	ax (40MHz)	26T	MCS0	40.37
	5230	46	ax (40MHz)	26T	MCS0	36.97
	5210	42	ax (80MHz)	26T	MCS0	82.10
Band 1/2A	5250	50	ax (160MHz L)	26T	MCS0	160.30
Ba 1//	5250	50	ax (160MHz U)	26T	MCS0	160.30
	5260	52	ax (20MHz)	26T	MCS0	20.74
∢	5280	56	ax (20MHz)	26T	MCS0	20.42
d 2/	5320	64	ax (20MHz)	26T	MCS0	20.48
Band 2A	5270	54	ax (40MHz)	26T	MCS0	37.98
ш	5310	62	ax (40MHz)	26T	MCS0	40.63
	5290	58	ax (80MHz)	26T	MCS0	82.33
	5500	100	ax (20MHz)	26T	MCS0	18.82
	5600	120	ax (20MHz)	26T	MCS0	20.36
	5720	144	ax (20MHz)	26T	MCS0	20.59
	5510	102	ax (40MHz)	26T	MCS0	37.96
2C	5590	118	ax (40MHz)	26T	MCS0	41.24
Band 2C	5710	142	ax (40MHz)	26T	MCS0	40.49
Ba	5530	106	ax (80MHz)	26T	MCS0	81.66
	5610	122	ax (80MHz)	26T	MCS0	81.83
	5690	138	ax (80MHz)	26T	MCS0	82.50
	5570	114	ax (160MHz L)	26T	MCS0	158.00
	5570	114	ax (160MHz U)	26T	MCS0	156.30

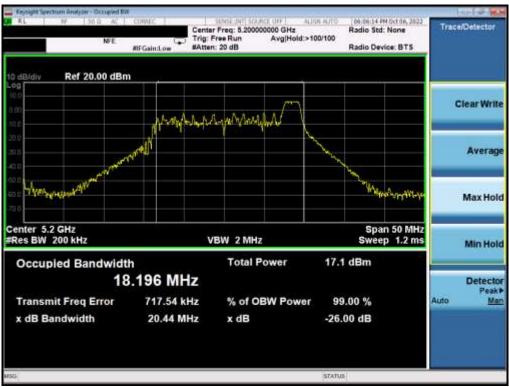
Table 7-2. Conducted Bandwidth Measurements MIMO ANT1 (26 Tones)

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Plot 7-1. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



Plot 7-2. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 40)

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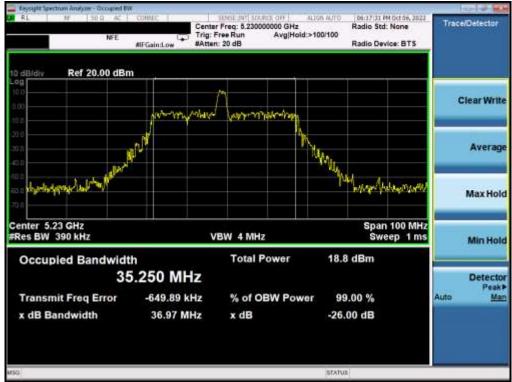
Plot 7-3. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



Plot 7-4. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 38)

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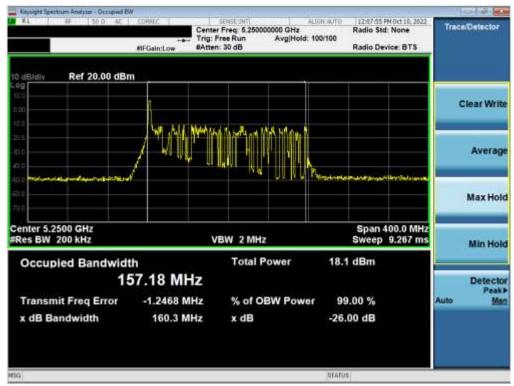
Plot 7-5. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



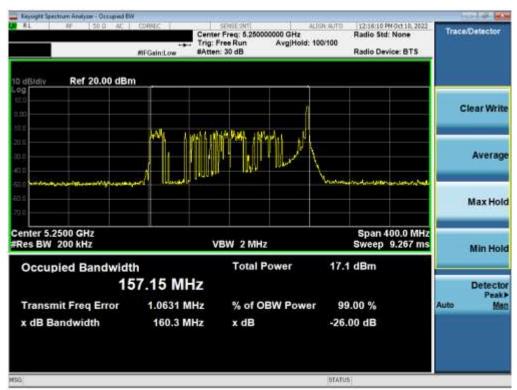
Plot 7-6. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 42)

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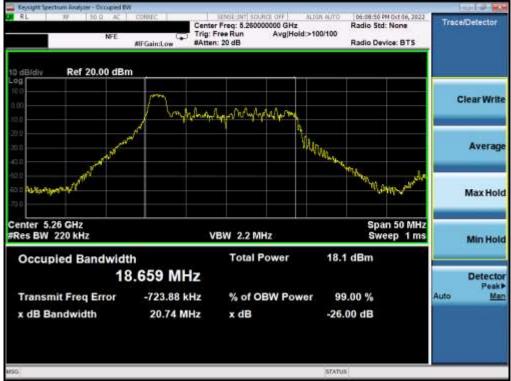
Plot 7-7. 26dB Bandwidth Plot MIMO ANT1 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)



Plot 7-8. 26dB Bandwidth Plot MIMO ANT1 (160MHz(U) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)

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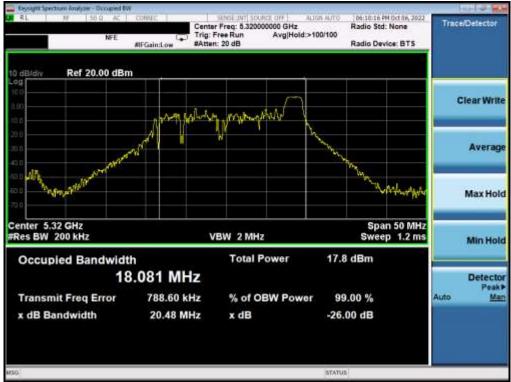
Plot 7-9. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



Plot 7-10. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 56)

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Plot 7-11. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



Plot 7-12. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 54)

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Plot 7-13. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 62)



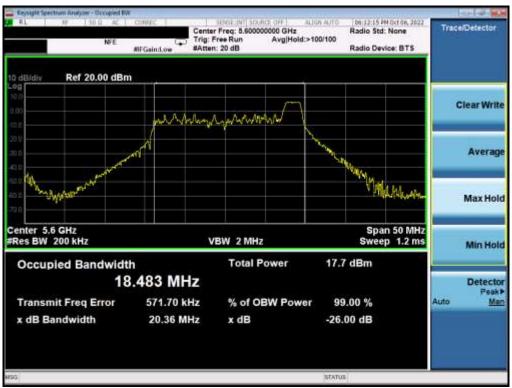
Plot 7-14. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 58)

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Plot 7-15. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



Plot 7-16. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

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Plot 7-17. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 144)



Plot 7-18. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 102)

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Plot 7-19. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 118)



Plot 7-20. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 142)

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Plot 7-21. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 106)



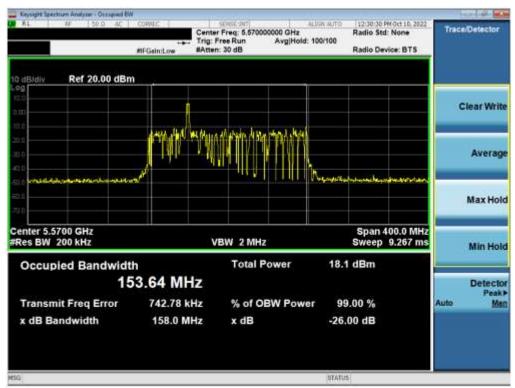
Plot 7-22. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 122)

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Plot 7-23. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 138)



Plot 7-24. 26dB Bandwidth Plot MIMO ANT1 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 114)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-25. 26dB Bandwidth Plot MIMO ANT1 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 114)

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MIMO Antenna-1 26 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	242T	MCS0	31.90
	5200	40	ax (20MHz)	242T	MCS0	30.88
Band 1	5240	48	ax (20MHz)	242T	MCS0	37.00
Ban	5190	38	ax (40MHz)	484T	MCS0	91.00
	5230	46	ax (40MHz)	484T	MCS0	87.55
	5210	42	ax (80MHz)	996T	MCS0	170.70
Band 1/2A	5250	50	ax (160MHz)	996T*2	MCS0	161.50
	5260	52	ax (20MHz)	242T	MCS0	36.52
	5280	56	ax (20MHz)	242T	MCS0	35.01
Band 2A	5320	64	ax (20MHz)	242T	MCS0	38.41
Bane	5270	54	ax (40MHz)	484T	MCS0	89.33
	5310	62	ax (40MHz)	484T	MCS0	91.35
	5290	58	ax (80MHz)	996T	MCS0	152.30
	5500	100	ax (20MHz)	242T	MCS0	38.66
	5600	120	ax (20MHz)	242T	MCS0	39.21
	5720	144	ax (20MHz)	242T	MCS0	40.04
	5510	102	ax (40MHz)	484T	MCS0	91.55
Band 2C	5590	118	ax (40MHz)	484T	MCS0	78.13
Band	5710	142	ax (40MHz)	484T	MCS0	87.87
	5530	106	ax (80MHz)	996T	MCS0	153.10
	5610	122	ax (80MHz)	996T	MCS0	134.10
	5690	138	ax (80MHz)	996T	MCS0	150.40
	5570	114	ax (160MHz)	996T*2	MCS0	162.00

Table 7-3. Conducted Bandwidth Measurements MIMO ANT1 (Full Tones)

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Plot 7-26. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 36)



Plot 7-27. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT		
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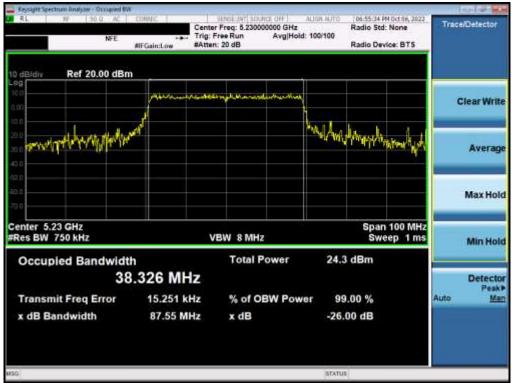
Plot 7-28. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 48)



Plot 7-29. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 38)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT		
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Plot 7-30. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 46)



Plot 7-31. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 1) - Ch. 42)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT		
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Keysight Spectrum Analyzer - Occupied BW		WESSERVEN	W 2005-			
■ RL === [30.0.4C]	MFGain:Low	SENSE 341 Center Freq: 5.25000 Trig: Free Run #Atten: 30 dB	ALIGN J 0000 GHz Avg Hold: 100/1	Radio Std	2408210444	Trace/Detector
10 dBidly Ref 20.00 dBm		·····				Clear Write
10.0 20.0 20.0 40.0 20.0				Derighterstersterster	Harthalas	Average
500						Max Hold
Center 5.2500 GHz #Res BW 200 kHz		VBW 2 MHz		Sweep	00.0 MHz 9.267 ms	Min Hold
	6.30 MH			23.1 dBm		Detector Peak
Transmit Freq Error x dB Bandwidth	-182.95 kH 161.5 MH		W Power	99.00 % -26.00 dB		Auto <u>Man</u>
MSG			3	TATUS		

Plot 7-32. 26dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax - 996*2 Tones (UNII Band 1/2A) - Ch. 50)



Plot 7-33. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 007	
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Plot 7-34. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 56)



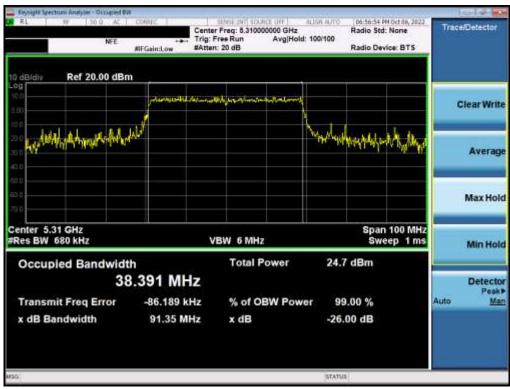
Plot 7-35. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Da as 04 st 007	
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Plot 7-36. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 54)



Plot 7-37. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 62)

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Plot 7-38. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2A) - Ch. 58)



Plot 7-39. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 100)

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Plot 7-40. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 120)



Plot 7-41. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 144)

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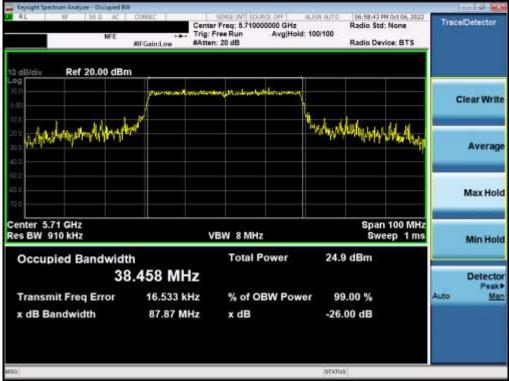
Plot 7-42. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 102)



Plot 7-43. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 118)

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Plot 7-44. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)



Plot 7-45. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 106)

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Plot 7-46. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 122)



Plot 7-47. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 138)

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RL #F [30.0 4C]	Cente Trig: I	SERSESNET r Freq: 5.570000000 GHz Free Run Avg Hold t: 30 dB	Radio St 100/100	PM Oct 10, 2022 d: None rvice: BTS	Trace/	Detector
o dBidiy Ref 20.00 dBm						
					CI	ear Write
10 00 00			Lannahan	Warmani		Average
50 00					,	Max Hold
enter 5.5700 GHz Res BW 200 kHz	v	BW 2 MHz		400.0 MHz 9.267 ms	G	Min Hold
Occupied Bandwidth	6.53 MHz	Total Power	23.1 dBm			Detector
Transmit Freq Error x dB Bandwidth	37.476 kHz 162.0 MHz	% of OBW Pow x dB	er 99.00 % -26.00 dB		Auto	Peak Peak
a'			STATUS		_	

Plot 7-48. 26dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 2C) – Ch. 114)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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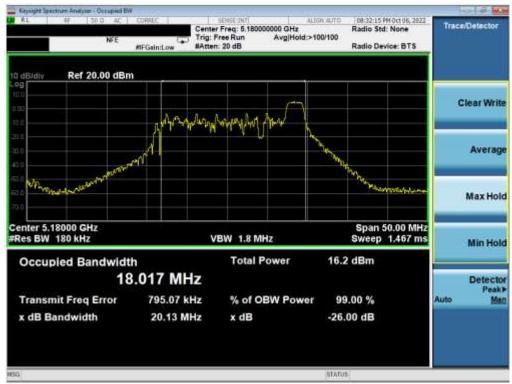
MIMO Antenna-2 26dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	26T	MCS0	20.13
	5200	40	ax (20MHz)	26T	MCS0	19.77
Band 1	5240	48	ax (20MHz)	26T	MCS0	18.31
Ban	5190	38	ax (40MHz)	26T	MCS0	40.04
	5230	46	ax (40MHz)	26T	MCS0	38.07
	5210	42	ax (80MHz)	26T	MCS0	81.10
Band 1/2A	5250	50	ax (160MHz L)	26T	MCS0	158.50
Ba 1/:	5250	50	ax (160MHz U)	26T	MCS0	155.60
	5260	52	ax (20MHz)	26T	MCS0	20.32
4	5280	56	ax (20MHz)	26T	MCS0	20.03
d 2/	5320	64	ax (20MHz)	26T	MCS0	19.70
Band 2A	5270	54	ax (40MHz)	26T	MCS0	37.95
ш	5310	62	ax (40MHz)	26T	MCS0	39.71
	5290	58	ax (80MHz)	26T	MCS0	80.72
	5500	100	ax (20MHz)	26T	MCS0	18.39
	5600	120	ax (20MHz)	26T	MCS0	20.13
	5720	144	ax (20MHz)	26T	MCS0	19.73
	5510	102	ax (40MHz)	26T	MCS0	38.04
2C	5590	118	ax (40MHz)	26T	MCS0	39.86
Band 2C	5710	142	ax (40MHz)	26T	MCS0	40.35
Ba	5530	106	ax (80MHz)	26T	MCS0	80.69
	5610	122	ax (80MHz)	26T	MCS0	81.65
	5690	138	ax (80MHz)	26T	MCS0	81.10
	5570	114	ax (160MHz L)	26T	MCS0	157.90
	5570	114	ax (160MHz U)	26T	MCS0	158.00

Table 7-4. Conducted Bandwidth Measurements MIMO ANT2 (26 Tones)

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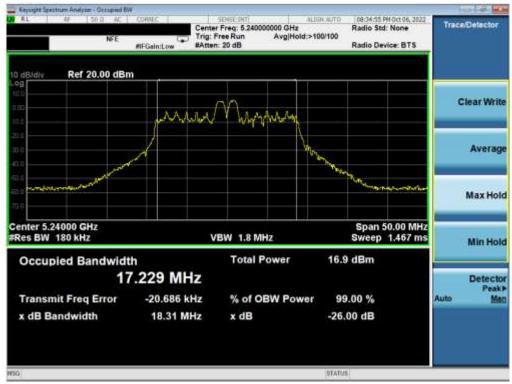
Plot 7-49. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 36)



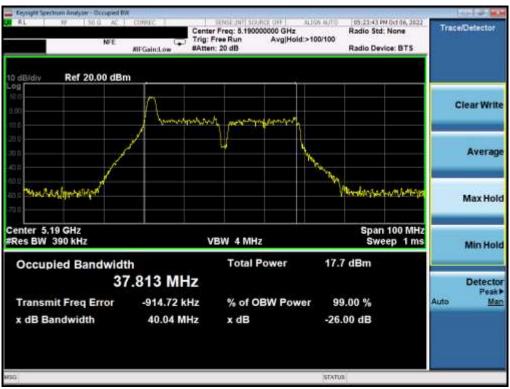
Plot 7-50. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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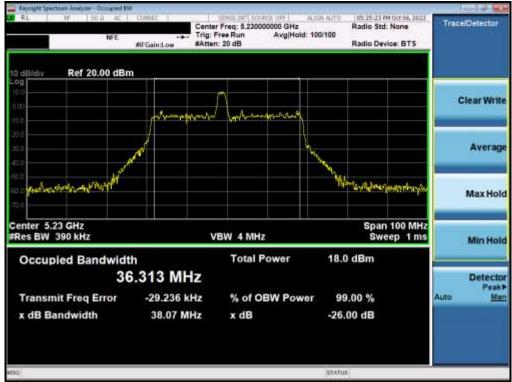
Plot 7-51. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 48)



Plot 7-52. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 38)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 11 of 227
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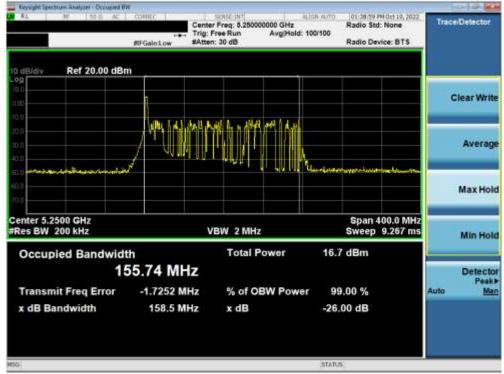
Plot 7-53. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 46)



Plot 7-54. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 1) - Ch. 42)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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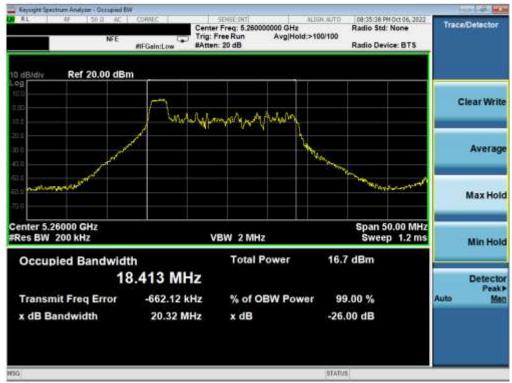
Plot 7-55. 26dB Bandwidth Plot MIMO ANT2 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 1/2A) - Ch. 50)



Plot 7-56. 26dB Bandwidth Plot MIMO ANT2 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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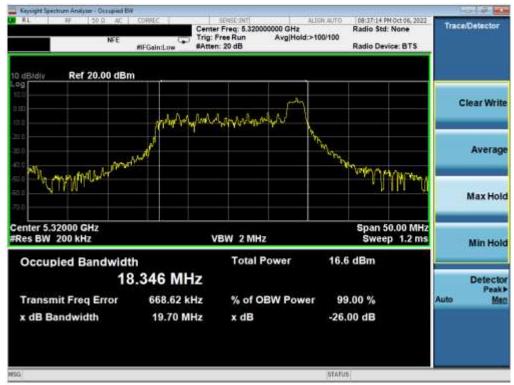
Plot 7-57. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 52)



Plot 7-58. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 56)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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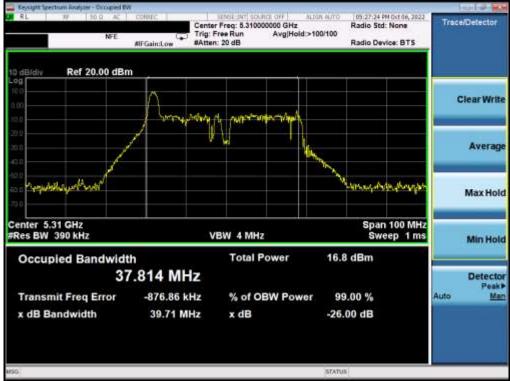
Plot 7-59. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 64)



Plot 7-60. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 54)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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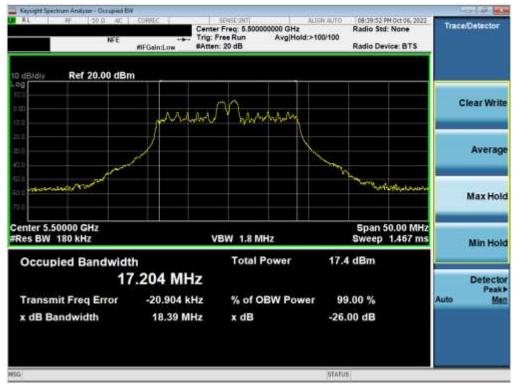
Plot 7-61. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 62)



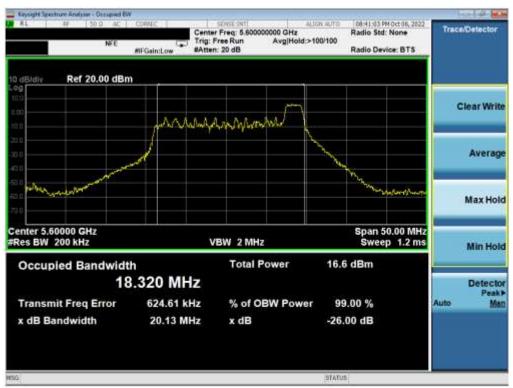
Plot 7-62. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2A) - Ch. 58)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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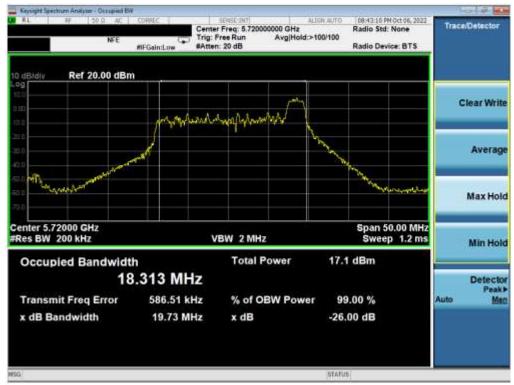
Plot 7-63. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 100)



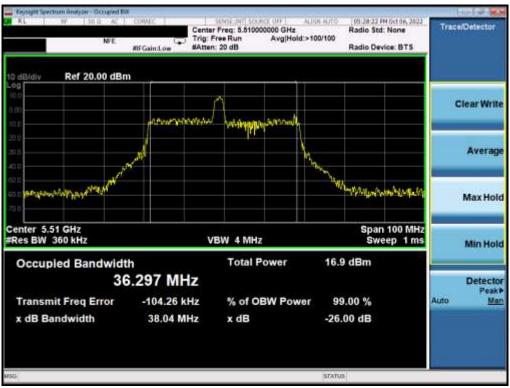
Plot 7-64. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 120)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-65. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 144)



Plot 7-66. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 102)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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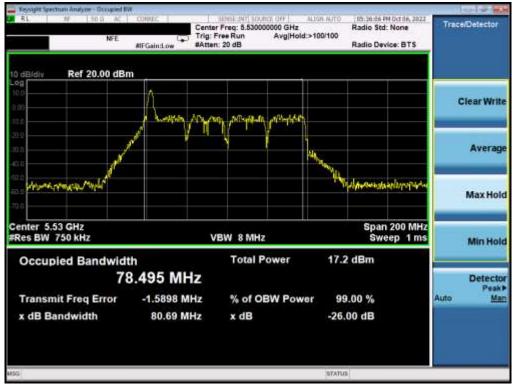
Plot 7-67. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



Plot 7-68. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 142)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-69. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 106)



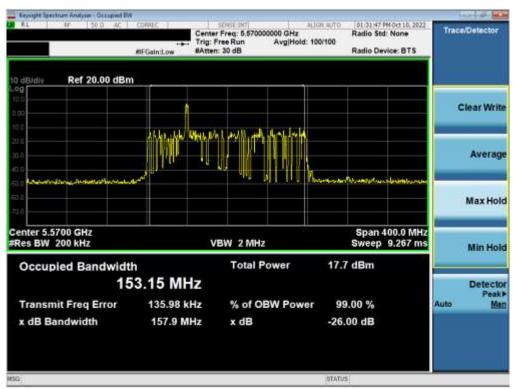
Plot 7-70. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 122)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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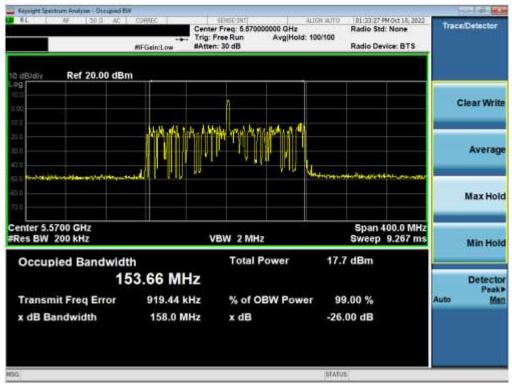
Plot 7-71. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 138)



Plot 7-72. 26dB Bandwidth Plot MIMO ANT2 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 2C) - Ch. 114)

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Plot 7-73. 26dB Bandwidth Plot MIMO ANT2 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 114)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	
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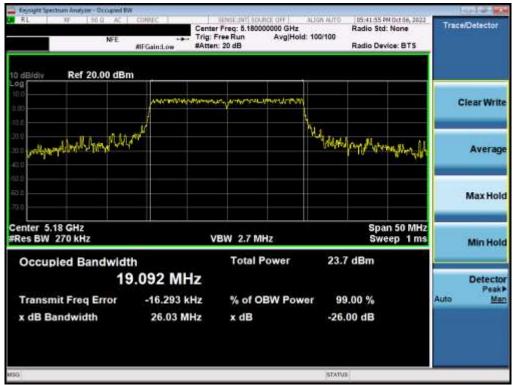
MIMO Antenna-2 26dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
	5180	36	ax (20MHz)	242T	MCS0	26.03
	5200	40	ax (20MHz)	242T	MCS0	24.65
d 1	5240	48	ax (20MHz)	242T	MCS0	21.75
Band 1	5190	38	ax (40MHz)	484T	MCS0	44.51
	5230	46	ax (40MHz)	484T	MCS0	46.07
	5210	42	ax (80MHz)	996T	MCS0	85.45
Band 1/2A	5250	50	ax (160MHz)	996T*2	MCS0	161.50
	5260	52	ax (20MHz)	242T	MCS0	25.38
	5280	56	ax (20MHz)	242T	MCS0	23.28
Band 2A	5320	64	ax (20MHz)	242T	MCS0	22.75
Bane	5270	54	ax (40MHz)	484T	MCS0	44.59
	5310	62	ax (40MHz)	484T	MCS0	42.78
	5290	58	ax (80MHz)	996T	MCS0	85.50
	5500	100	ax (20MHz)	242T	MCS0	27.92
	5600	120	ax (20MHz)	242T	MCS0	40.82
	5720	144	ax (20MHz)	242T	MCS0	33.08
	5510	102	ax (40MHz)	484T	MCS0	46.45
1 2C	5590	118	ax (40MHz)	484T	MCS0	45.48
Band 2C	5710	142	ax (40MHz)	484T	MCS0	54.74
	5530	106	ax (80MHz)	996T	MCS0	86.11
	5610	122	ax (80MHz)	996T	MCS0	86.00
	5690	138	ax (80MHz)	996T	MCS0	134.80
	5570	114	ax (160MHz)	996T*2	MCS0	160.60

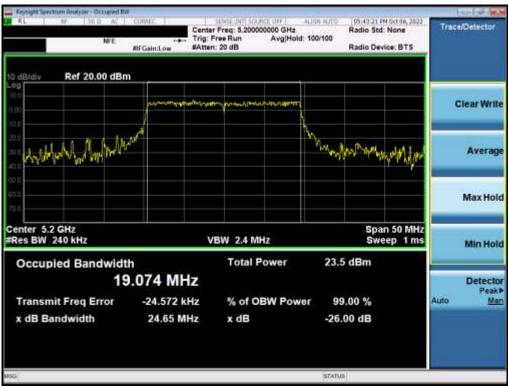
 Table 7-5. Conducted Bandwidth Measurements MIMO ANT2 (Full Tones)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	
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Plot 7-74. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 36)



Plot 7-75. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 40)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-76. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 1) - Ch. 48)



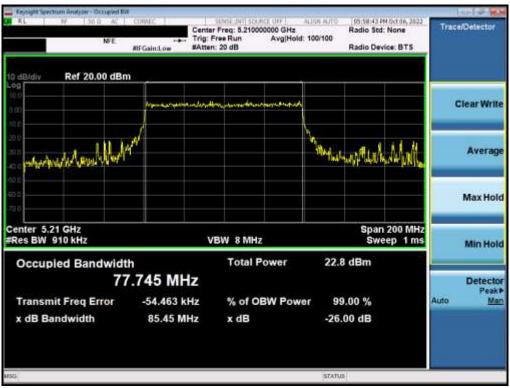
Plot 7-77. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 38)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-78. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 1) - Ch. 46)



Plot 7-79. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 1) - Ch. 42)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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🚆 Keysight Spectrum Analyzer - Occupied EW		West States	W 2.00			
■ RL #F [50.0 4C]	MFGain:Low	SDISCONT Center Freq: 5.25000 Trig: Free Run #Atten: 30 dB		Radio St 100	PMOct 10, 2022 cd: None evice: BTS	Trace/Detector
10 dBJdlv Ref 20.00 dBm	·					
						Clear Write
in t	and a second	ana ana depute a ser a	with the second			
200 200 400 400 400 400 400 400 400 400				وياردو ماريا وارتباطو ارور للاو		Average
53.0 Mars/ - Julian					the server	
63 fi						Max Hold
Center 5.2500 GHz #Res BW 200 kHz		VBW 2 MHz			400.0 MHz 9.267 ms	Min Hold
Occupied Bandwidt	h	Total P	ower	23.1 dBm		
15	6.10 MH	z				Detector
Transmit Freq Error	105.98 ki	Iz % of Of	BW Power	99.00 %		Auto Man
x dB Bandwidth	161.5 MH	łz xdB		-26.00 dB		
MSG				STATUS		

Plot 7-80. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax - 996*2 Tones (UNII Band 1/2A) - Ch. 50)



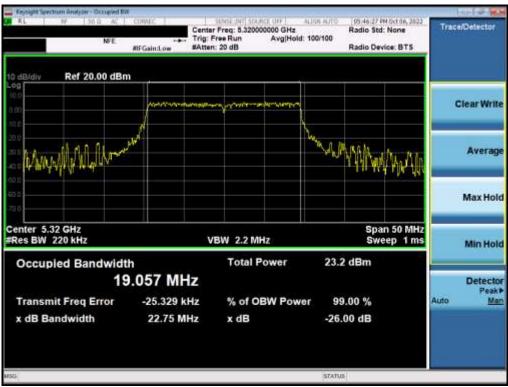
Plot 7-81. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 52)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-82. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 56)



Plot 7-83. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2A) - Ch. 64)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-84. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 54)



Plot 7-85. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 2A) - Ch. 62)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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V9.0 02/01/2019			



🚘 Keysight Spectrum Analysise - Occupied BV						-	
UN RL NF 150 G AC	Han Trig:	er Freq: 5.29000000 GH Free Run Avg F n: 20 dB	ALIGN AUTO Iz Iold: 100/100	Radio Dev	- 00011000-	Trace/Deter	ctor
10 dB/div Ref 20.00 dBn	n						_
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4 <u>0 0</u> 60 0 -71 0						Max	Hold
Center 5.29 GHz #Res BW 910 kHz	,	VBW 8 MHz			200 MHz ep 1 ms	Min	Hold
Occupied Bandwidt 77	^h 7.638 MHz	Total Power	23	.0 dBm			ector
Transmit Freq Error x dB Bandwidth	-78.066 kHz 85.50 MHz	% of OBW Po x dB		99.00 % 5.00 dB		Auto ,	Man
usc			STAT	us:			_

Plot 7-86. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 2A) - Ch. 58)



Plot 7-87. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 100)

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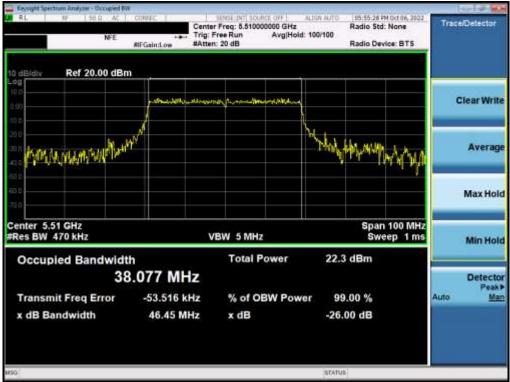
Plot 7-88. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 120)



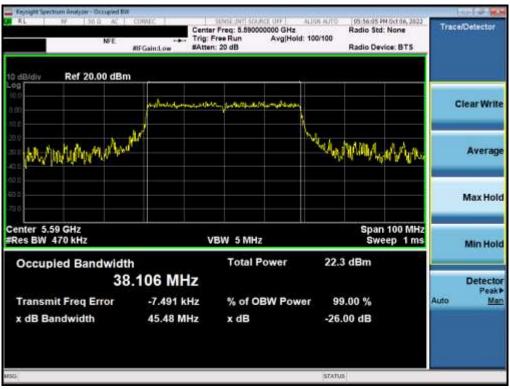
Plot 7-89. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 2C) - Ch. 144)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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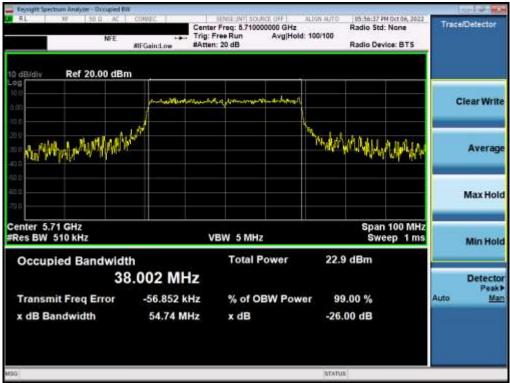
Plot 7-90. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)



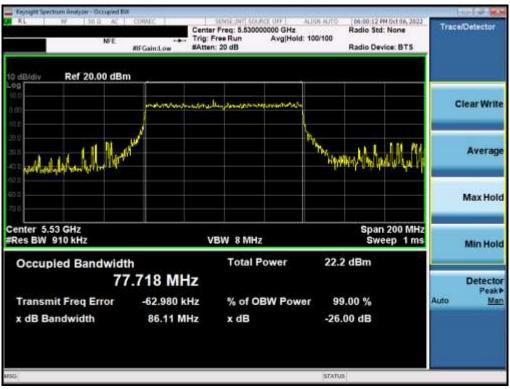
Plot 7-91. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 2C) - Ch. 118)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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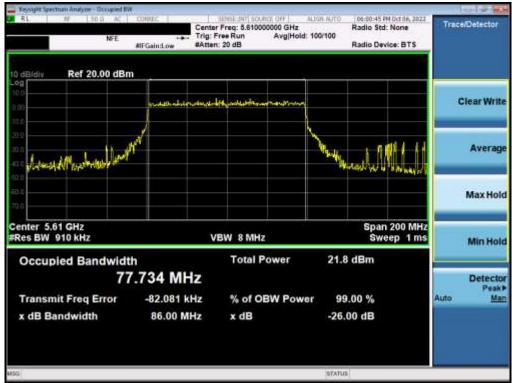
Plot 7-92. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)



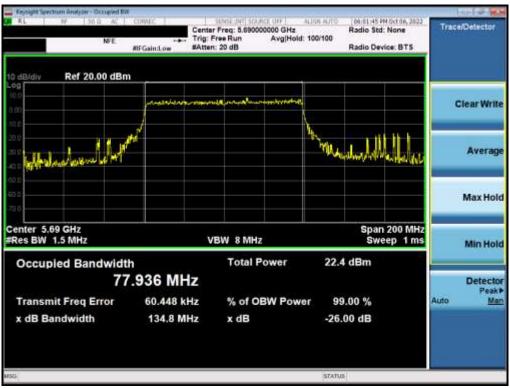
Plot 7-93. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 106)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-94. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)



Plot 7-95. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 2C) - Ch. 138)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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	extrum Analyzer - Occupied						
RL.	₩ (30.0 4C	Trig:	SERSE 345] er Freg: 5.570000000 GF Free Run Avg t n: 30 dB	ALIGN AUTO Iz Iold: 100/100	Radio Std Radio De	SCHULDARS	Trace/Detector
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1000			ى د الى ال ەروبارو اروپار مىرىمىيە				Clear Write
10.0		all a start a st					
2011 30.0 40.0	NATION AND AND AND AND AND AND AND AND AND AN	world		West	hunster	Personation	Average
60.0 60.0 70.0							Max Hold
Center 5. #Res BW	5700 GHz 200 kHz		VBW 2 MHz			100.0 MHz 9.267 ms	Min Hold
Occu	pied Bandwid	ith	Total Power	23.3	dBm		
		56.27 MHz					Detector Peak
Transr	mit Freq Error	170.13 kHz	% of OBW Po	ower 99	.00 %		Auto Man
x dB B	landwidth	160.6 MHz	x dB	-26.	00 dB		
NSG				STATU	ξĺ.	_	

Plot 7-96. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 2C) – Ch. 114)

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7.3 6dB Bandwidth Measurement – 802.11ax OFDMA

<u>§15.407 (e); RSS-Gen [6.7]</u>

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz and 5.850-5.895 bands, the 6dB bandwidth must be \geq 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2 KDB 789033 D02 v02r01 – Section C

Test Settings

- The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100 kHz
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

The 6dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

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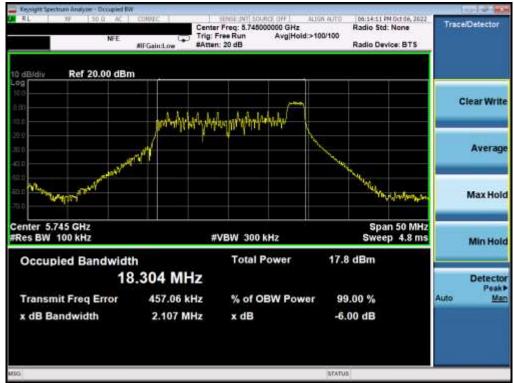
MIMO Antenna-1 6 dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	26T	MCS0	2.11
	5785	157	ax (20MHz)	26T	MCS0	2.16
ld 3	5825	165	ax (20MHz)	26T	MCS0	2.15
Band	5755	151	ax (40MHz)	26T	MCS0	2.20
	5795	159	ax (40MHz)	26T	MCS0	2.19
	5775	155	ax (80MHz)	26T	MCS0	2.29

Table 7-6. Conducted Bandwidth Measurements MIMO ANT1 (26 Tones)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
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Plot 7-97. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 149)



Plot 7-98. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
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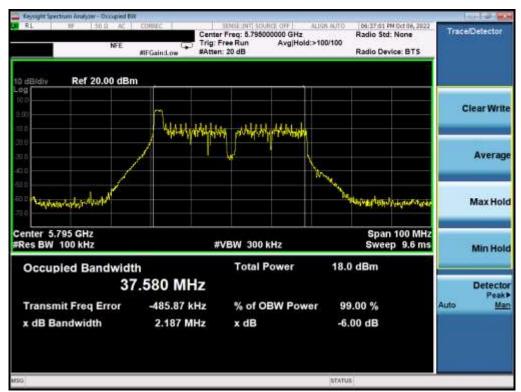
Plot 7-99. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 165)



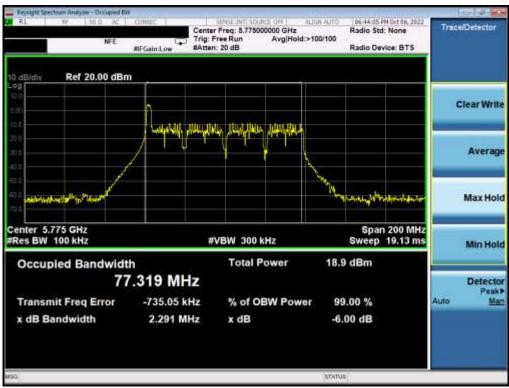
Plot 7-100. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
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Plot 7-101. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



Plot 7-102. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 155)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
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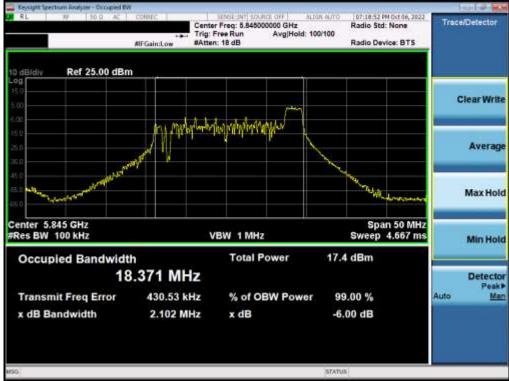


	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	26T	MCS0	2.10
Band 4	5865	173	ax (20MHz)	26T	MCS0	2.13
Danu 4		177	ax (20MHz)	26T	MCS0	2.18
Band 3/4	5835	167	ax (40MHz)	26T	MCS0	2.16
Band 4	5875	175	ax (40MHz)	26T	MCS0	2.16
	5855	171	ax (80MHz)	26T	MCS0	2.84
Band 3/4	5815	163	ax (160MHz L)	26T	MCS0	3.51
	5815	163	ax (160MHz U)	26T	MCS0	3.01

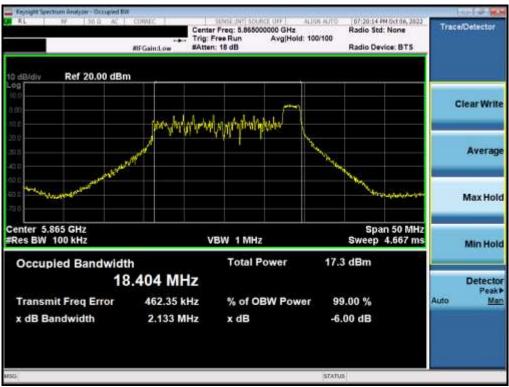
Table 7-7. Conducted Bandwidth Measurements MIMO ANT1 (26 Tones)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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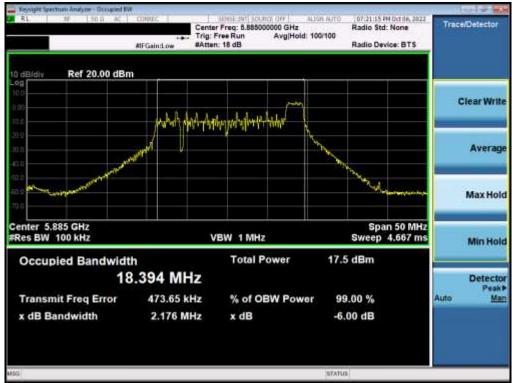
Plot 7-103. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 169)



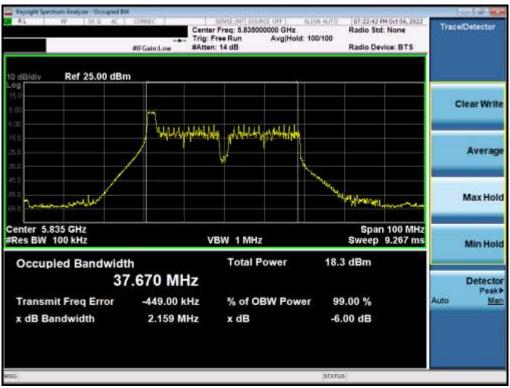
Plot 7-104. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 173)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 75 at 007	
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Plot 7-105. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 177)



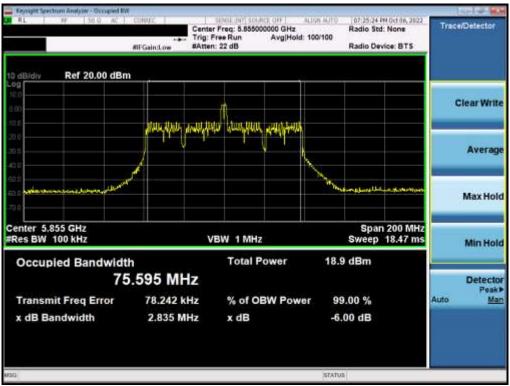
Plot 7-106. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 167)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 of 007	
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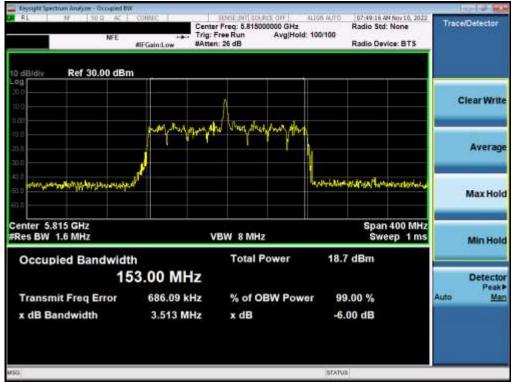
Plot 7-107. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 175)



Plot 7-108. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-109. 6dB Bandwidth Plot MIMO ANT1 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 163)



Plot 7-110. 6dB Bandwidth Plot MIMO ANT1 (160MHz(U) BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 163)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Antenna-1 6 dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	242T	MCS0	19.10
	5785	157	ax (20MHz)	242T	MCS0	18.99
ld 3	5825	165	ax (20MHz)	242T	MCS0	19.01
Band	5755	151	ax (40MHz)	484T	MCS0	38.12
	5795	159	ax (40MHz)	484T	MCS0	38.19
	5775	155	ax (80MHz)	996T	MCS0	78.21

Table 7-8. Conducted Bandwidth Measurements MIMO ANT1 (Full Tones)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
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🚘 Keysight Spectrum Analyter - Occupie		A CONTRACTOR OF CONTRACTOR	CONTRACTOR -	and the second second	and the second s
UN RL XF SO G AV	Cer MFGain:Low #At	ter Freq: 5.745000000 GH g: FreeRun Avg H ten: 20 dB	AUGN AUTO 2 old: 100/100	Radio Device: B	Trace/Detector
10 dB/div Ref 20.00 d Log 10.0		myrana	-		Clear Write
100 200 200 uniteline Atlante Astronomia	ewest"		Walderston	agailtraged of the	Average
40.0 40.0 -70.0					Max Hold
Center 5.745 GHz #Res BW 100 kHz		#VBW 300 kHz		Span 50 Sweep 4.	
Occupied Bandwi , Transmit Freq Error x dB Bandwidth	dth 19.106 MHz -43.922 kHz 19.10 MHz	Total Power % of OBW Po x dB	wer 99	dBm .00 % 00 dB	Detector Peak≯ Auto <u>Man</u>
MSG			STATUS	1	

Plot 7-111. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)



Plot 7-112. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occupied BW	and the second second	N TANK MANAGARAN			
NFE	Han Trig	ter Freq: 8.825000000 GHz ; Free Run Avg Ho ten: 20 dB	id: 100/100	06:54:00 PM Dct ne, 2022 tadio Std: None tadio Device: BTS	Trace/Detector
10 dB/div Ref 20.00 dBm			1		
10.0	manenser	myndaraandad	7		Clear Write
132.0 20.0 	and a second		Unimon	high-anonografia andrai	Average
4019 4010					Max Hold
Center 5.825 GHz #Res BW 100 kHz		#VBW 300 kHz		Span 50 MHz Sweep 4.8 ms	Min Hold
Occupied Bandwidth		Total Power	25.3 0	1Bm	
19	222 MHz				Detector Peak
Transmit Freq Error x dB Bandwidth	-63.517 kHz 19.01 MHz	% of OBW Por x dB	wer 99.0 -6.00		Auto <u>Man</u>
WSG			STATUS		

Plot 7-113. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)



Plot 7-114. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 151)

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Plot 7-115. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 159)



Plot 7-116. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax - 996 Tones (UNII Band 3) - Ch. 155)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	Approved by: Technical Manager				
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	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	242T	MCS0	19.07
Band 4	5865	173	ax (20MHz)	242T	MCS0	19.08
Danu 4	5885	177	ax (20MHz)	242T	MCS0	19.06
Band 3/4	5835	167	ax (40MHz)	484T	MCS0	38.10
Band 4	5875	175	ax (40MHz)	484T	MCS0	38.15
Band 3/4	5855	171	ax (80MHz)	996T	MCS0	78.22
Danu 5/4	5815	163	ax (160MHz)	996T	MCS0	156.90

Table 7-9. Conducted Bandwidth Measurements MIMO ANT1 (Full Tones)

FCC ID: A3LSMS911JPN		Approved by:		
FCC ID. ASESINGSTISFIN		MEASUREMENT REPORT	Technical Manager	
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🚘 Keysight Spectrum Analyser - Occupied BV				0.0000000		
RL NF 150 G AC	Cen Trig	ter Freq: 5.84500000 G : Free Run Avg en: 28 dB		Radio De	- 000 (000 -	Trace/Detector
10 dB/div Ref 20.00 dBn	n		- (i			
10.0	النهاسة المراجع المراجع	uter and the host of				Clear Write
100 200 200 200 200	wed		howster	ant an	Amminatan	Average
4010 60 0 70 0						Max Hold
Center 5,845 GHz #Res BW 100 kHz		VBW 1 MHz	112		an 50 MHz 4.667 ms	Min Hold
Occupied Bandwidt	^h 9.142 MHz	Total Power 25.5 dBm				Detector Peak
Transmit Freq Error x dB Bandwidth	-27.271 kHz 19.07 MHz	% of OBW P x dB		9.00 % .00 dB		Auto <u>Man</u>
uss			STATU	a:		

Plot 7-117. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3/4) – Ch. 169)

Transmit Freq Error x dB Bandwidth	-23.075 kHz 19.08 MHz	% of OBW Po x dB	wer 99.00 % -6.00 dB	Peakt Auto <u>Mar</u>
Occupied Bandwidt	h .224 MHz	Total Power	Detecto	
Center 5.865 GHz #Res BW 100 kHz		/BW 1 MHz	Span Sweep 4	50 MHz .667 ms Min Hole
419 600 700				Max Hole
200 material services and a service of the services of the service	#d		Nursel and a state of the second state of the	Averag
Log 10.0 0.09	onissticture latingthe	an futur da an		Clear Write
10 dB/div Ref 20.00 dBn				
RL 37 30.0 AC	Cente Trig:	Freq: 5.855000000 GH: Free Run Avg He n: 28 dB		Ione Trace/Detector

Plot 7-118. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 173)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT			
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	-a Trig:	er Freq: 5.885000000 GHz Free Run Avg Hol n: 28 dB	id: 100/100	td: None evice: BTS	Trace/Detector
0 dB/div Ref 20.00 dB	im m	hayadasana badarkan			Clear Write
12.0 10.0 10.0 million (19.0 m	regent		handoniand houses	willingen	Average
50 D 50 D					Max Hold
Center 5,885 GHz Res BW 100 kHz Occupied Bandwid	343	VBW 1 MHz Total Power		an 50 MHz 4.667 ms	Min Hold
	9.093 MHz -24.412 kHz 19.06 MHz	% of OBW Pow x dB	ver 99.00 % -6.00 dB		Detector PeakP Auto <u>Man</u>

Plot 7-119. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 177)



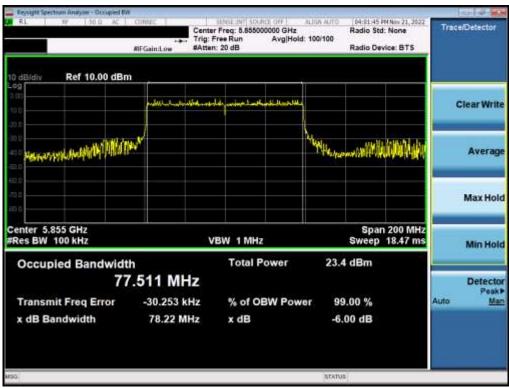
Plot 7-120. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 3/4) - Ch. 167)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT Technica					
Test Report S/N:	Test Dates:	EUT Type:	Dama 05 at 007				
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🚢 Keysight Spectrum Analyter - Occupied I		W					. 1	
UN RL YF 50.0 AC.	AFGain:Low	Center Freq: 5.87500 Trig: Free Run #Atten: 24 dB		AUGN AUTO	Radio Dev		Trac	e/Detector
10 dB/div Ref 10.00 dB	m						_	
0.00	and hadre	nthematics another dama	atrationale				2	Clear Write
2000 2000 WARMANINA MANANA 2000	w ^{r/}			Mannah	ni, kaliprili,	alationa a		Average
800 708 800								Max Hold
Center 5.875 GHz #Res BW 100 kHz		VBW 1 MHz				100 MHz 9.267 ms		Min Hold
Occupied Bandwid	Total P	Total Power 23.8 dBm				Detect		
Transmit Freq Error x dB Bandwidth	-29.440 k 38.15 M		BW Pow		.00 % 00 dB		Auto	Pesk⊁ Man
usc				STATU	i i			

Plot 7-121. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 175)



Plot 7-122. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 3/4) – Ch. 171)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:			
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Explight Spectro	um Analyter - Occupi		SS 111	1111144			1000000	30103525	MARKA SAN	-	-0-140-040-
	NF 54.0 /		eircl,ow	Center Fr			ALIGN AUTO	07:16:36 Radio Sto Radio De		Trei	celDetector
10 dB/div	Ref 10.00 c	iBm						_			
1.00 -0.0			بلنقةمسالنا	haa hoo	phand	4-052.0,2				ł	Clear Write
30.0											
451 4511	المردر اساق روز به از تاریخ و ا	Nort					Lunner	adamenta a	And the second second		Average
20.0											Max Hold
-60 11											
Center 5.81 #Res BW 1				#VE	3W 1 MH	Iz			1 400 MHz 36.93 ms		Min Hold
Occupi	Occupied Bandwidth							6 dBm			-
		155.9	94 MH	iz							Detector Peak >
Transmi	t Freq Error	- 1	223.32 k	Hz	% of O	BW Pow	er 99	.00 %		Auto	Mat
x dB Bar	ndwidth		156.9 M	Hz	x dB		-6.	00 dB			
WRG							STATUS	1			

Plot 7-123. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11ax – 996*2 Tones (UNII Band 3/4) – Ch. 163)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2212080136-11-R1.A3L	09/02/2022 - 02/24/2023	Portable Handset	Page 87 of 237
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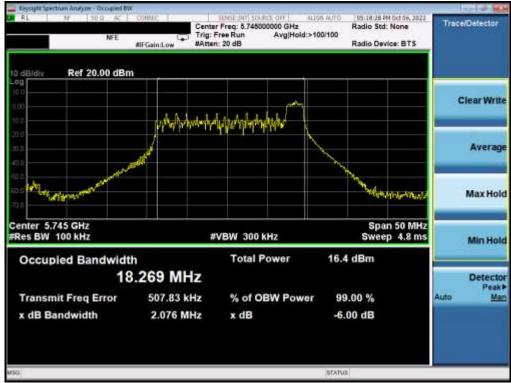
MIMO Antenna-2 6dB Bandwidth Measurements (26 Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	26T	MCS0	2.08
	5785	157	ax (20MHz)	26T	MCS0	2.10
id 3	5825	165	ax (20MHz)	26T	MCS0	2.11
Band	5755	151	ax (40MHz)	26T	MCS0	2.20
	5795	159	ax (40MHz)	26T	MCS0	2.18
	5775	155	ax (80MHz)	26T	MCS0	2.87

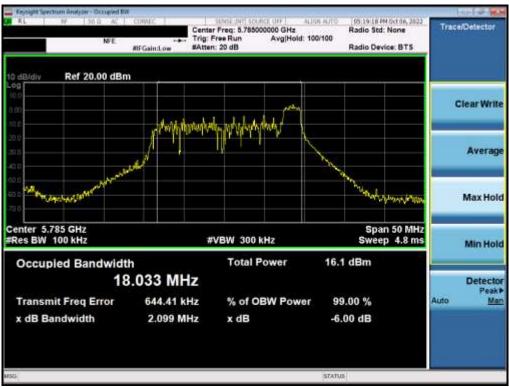
Table 7-10. Conducted Bandwidth Measurements MIMO ANT2 (26 Tones)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by:
FCC ID. ASLSWIS911JFN		MEASUREMENT REFORT	Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 00 of 227
1M2212080136-11-R1.A3L	09/02/2022 - 02/24/2023	Portable Handset	Page 88 of 237
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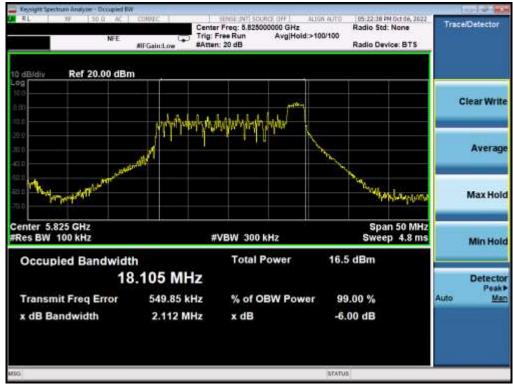
Plot 7-124. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 149)



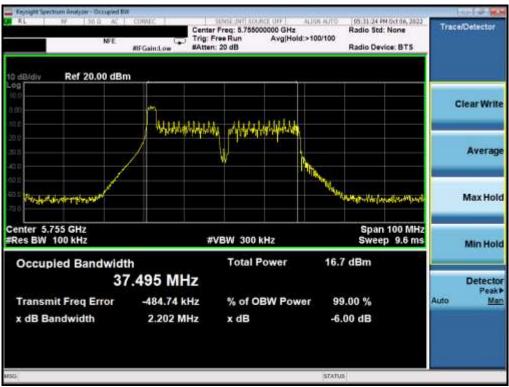
Plot 7-125. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 90 of 227
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Plot 7-126. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 165)



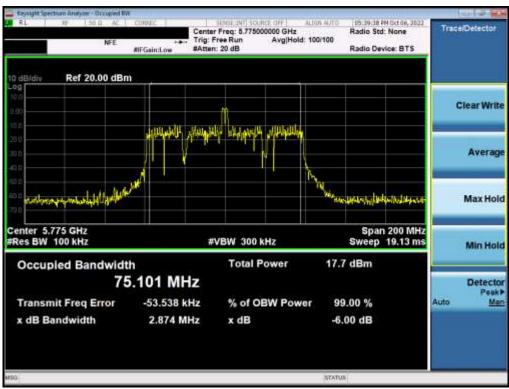
Plot 7-127. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2212080136-11-R1.A3L	09/02/2022 - 02/24/2023	Portable Handset	Page 90 of 237
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Plot 7-128. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 159)



Plot 7-129. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 155)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 01 of 227
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© 2023 ELEMENT	•		V9.0 02/01/2019

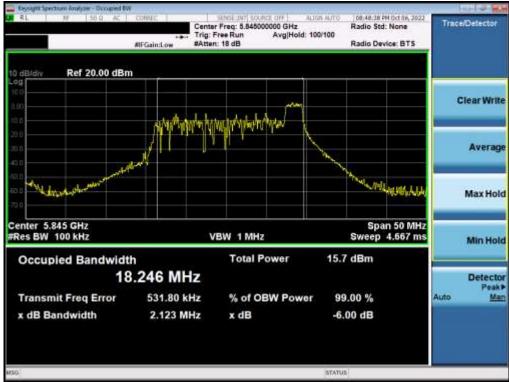


	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	26T	MCS0	2.12
Band 4	5865	173	ax (20MHz)	26T	MCS0	2.08
Danu 4	5885	177	ax (20MHz)	26T	MCS0	2.07
Band 3/4	5835	167	ax (40MHz)	26T	MCS0	2.17
Band 4	5875	175	ax (40MHz)	26T	MCS0	2.23
	5855	171	ax (80MHz)	26T	MCS0	2.80
Band 3/4	5815	163	ax (160MHz L)	26T	MCS0	3.04
	5815	163	ax (160MHz U)	26T	MCS0	3.09

Table 7-11. Conducted Bandwidth Measurements MIMO ANT2 (26 Tones)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 02 of 227
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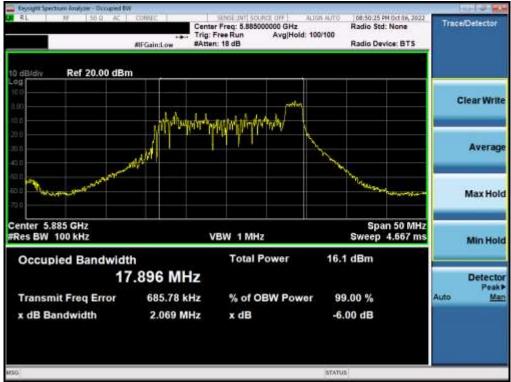
Plot 7-130. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 169)



Plot 7-131. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 173)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 02 of 227
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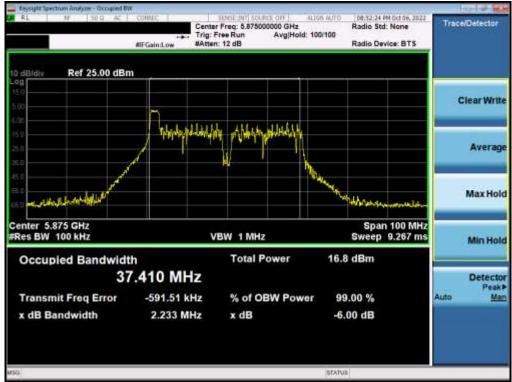
Plot 7-132. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 177)



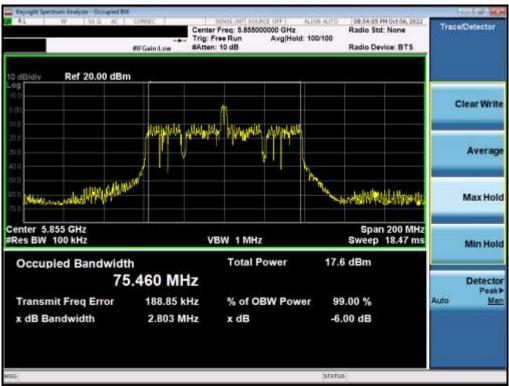
Plot 7-133. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 167)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 at 027
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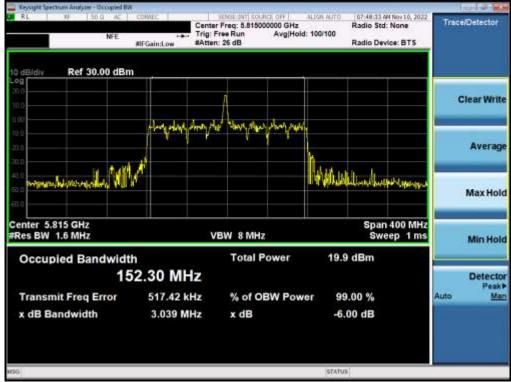
Plot 7-134. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 26 Tones (UNII Band 3) - Ch. 175)



Plot 7-135. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 171)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage OF of 227
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Plot 7-136. 6dB Bandwidth Plot MIMO ANT2 (160MHz(L) BW 802.11ax - 26 Tones (UNII Band 3/4) - Ch. 163)



Plot 7-137. 6dB Bandwidth Plot MIMO ANT2 (160MHz(U) BW 802.11ax – 26 Tones (UNII Band 3/4) – Ch. 163)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 06 of 227
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MIMO Antenna-2 6dB Bandwidth Measurements (Full Tones)

	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
	5745	149	ax (20MHz)	242T	MCS0	19.01
	5785	157	ax (20MHz)	242T	MCS0	19.12
ld 3	5825	165	ax (20MHz)	242T	MCS0	19.07
Band	5755	151	ax (40MHz)	484T	MCS0	38.23
	5795	159	ax (40MHz)	484T	MCS0	38.21
	5775	155	ax (80MHz)	996T	MCS0	78.11

Table 7-12. Conducted Bandwidth Measurements MIMO ANT2 (Full Tones)

FCC ID: A3LSMS911JPN		Approved by:	
FCC ID. ASLSWIS911JFN		Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dega 07 of 227
1M2212080136-11-R1.A3L	09/02/2022 - 02/24/2023	Portable Handset	Page 97 of 237
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👜 Keysight Spectrum Analyter - Occupies		ALC: 440.000	an second				a - 1	
UN RL XF 30.0 AC	#FGain:Low	Center Freq: 5.741 Trig: Free Run #Atten: 20 dB	5000000 GHz	ALION ALITO	Radio Dev	- 000100	Trac	e/Detector
10 dB/div Ref 20.00 dl	Bm							
0.00	malahih	unsungenises	ermentulow-					Clear Write
200 200 200 200 200 200 200	Marx			WINNE -	Wandlich	nteressioned in		Average
4018 4818 7010								Max Hold
Center 5.745 GHz #Res BW 100 kHz		#VBW 300) kHz		Spa Swee	n 50 MHz p 4.8 ms		Min Hold
Occupied Bandwi	dth	Total	Power	23.5	5 dBm			
1	19.058 MH	lz						Detector Peak
Transmit Freq Error x dB Bandwidth	-31.153 k 19.01 M		OBW Pow		9.00 % 00 dB		Auto	Man
MSG				STATU	ŧ.		-	

Plot 7-138. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)



Plot 7-139. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 157)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates: EUT Type:		Dama 00 at 007			
1M2212080136-11-R1.A3L 09/02/2022 - 02/24/2023		Portable Handset	Page 98 of 237			
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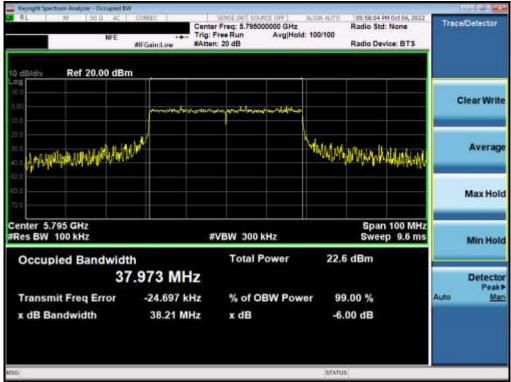
Plot 7-140. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 165)



Plot 7-141. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 151)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates: EUT Type:		Dama 00 at 007			
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Plot 7-142. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 3) - Ch. 159)



Plot 7-143. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11ax - 996 Tones (UNII Band 3) - Ch. 155)

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates: EUT Type:		Dama 400 at 007			
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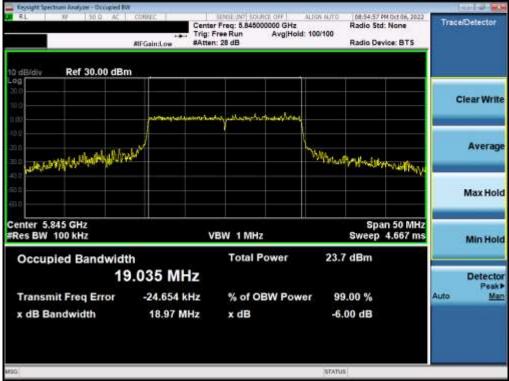


	Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3/4	5845	169	ax (20MHz)	242T	MCS0	18.97
Band 4	5865	173	ax (20MHz)	242T	MCS0	19.07
Dallu 4	5885	177	ax (20MHz)	242T	MCS0	19.09
Band 3/4	5835	167	ax (40MHz)	484T	MCS0	38.17
Band 4	5875	175	ax (40MHz)	484T	MCS0	38.12
Band 3/4	5855	171	ax (80MHz)	996T	MCS0	78.16
Danu 5/4	5815	163	ax (160MHz)	996T	MCS0	157.80

Table 7-13. Conducted Bandwidth Measurements MIMO ANT2 (Full Tones)

FCC ID: A3LSMS911JPN		Approved by:	
FCC ID. ASESINIS TISFIN		Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dega 101 of 227
1M2212080136-11-R1.A3L	09/02/2022 - 02/24/2023	Portable Handset	Page 101 of 237
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Plot 7-144. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3/4) – Ch. 169)



Plot 7-145. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 173)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager			
Test Report S/N:	Test Dates: EUT Type:		Dega 102 of 227			
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Plot 7-146. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11ax - 242 Tones (UNII Band 3) - Ch. 177)



Plot 7-147. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11ax - 484 Tones (UNII Band 3/4) - Ch. 167)

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT		Approved by: Technical Manager			
Test Report S/N:	Test Dates: EUT Type:		Da an 100 at 007			
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